Lancaster Laboratories

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared for:

Langan
500 Hyde Park
Doylestown PA 18901

215-348-7101

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

SAMPLE GROUP

The sample group for this submittal is 941914. Samples arrived at the laboratory on Tuesday, May 03, 2005. The PO# for this group is SUNOCO PHILLY REFINER.

Client Description	Lancaster Labs Number
S31-050205 Grab Water Sample	4516620
S27-050205 Grab Water Sample	4516621
S26-050205 Grab Water Sample	4516622

ELECTRONIC COPY TO	SUN: Aquaterra Tech.	Attn: Brad Spancake
1 COPY TO	LL	Attn: Angela Miller
1 COPY TO	Langan	Attn: Jason Hanna
ELECTRONIC COPY TO	Langan	Attn: Dennis Webster

Lancaster Laboratories

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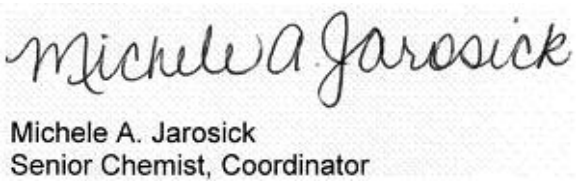
Analysis Report

Questions? Contact your Client Services Representative
Angela M Miller at (717) 656-2300.

Respectfully Submitted,



Michele A. Jarosick
Senior Chemist, Coordinator

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4516620

S31-050205 Grab Water Sample
SUN: Philadelphia Refinery AOI-4

Collected:05/02/2005 13:30 by MBS

Account Number: 10132

Submitted: 05/03/2005 16:35
Reported: 05/10/2005 at 15:14
Discard: 06/10/2005

Langan
500 Hyde Park
Doylestown PA 18901

S-031

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation*	As Received Method Detection Limit	Units	Dilution Factor
06035	Lead	7439-92-1	< 0.0010	0.0010	0.00021	mg/l	1
07879	EDB in Wastewater						
01087	Ethylene dibromide	106-93-4	< 0.028	0.028	0.0095	ug/l	1
02302	UST-Waters by 8260B						
02010	Methyl Tertiary Butyl Ether	1634-04-4	170.	5.	0.5	ug/l	1
05401	Benzene	71-43-2	53.	5.	0.5	ug/l	1
05402	1,2-Dichloroethane	107-06-2	< 5.	5.	1.	ug/l	1
05407	Toluene	108-88-3	40.	5.	0.7	ug/l	1
05415	Ethylbenzene	100-41-4	39.	5.	0.8	ug/l	1
05420	Isopropylbenzene	98-82-8	6.	5.	1.	ug/l	1
06310	Xylene (Total)	1330-20-7	150.	5.	0.8	ug/l	1

Commonwealth of Pennsylvania Lab Certification No. 36-037
This sample was filtered in the lab for dissolved metals.
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	05/06/2005 23:04	David K Beck	1
07879	EDB in Wastewater	SW-846 8011	1	05/06/2005 01:59	James H Place	1
02302	UST-Waters by 8260B	SW-846 8260B	1	05/06/2005 03:32	Andrea D Moore	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	05/06/2005 03:32	Andrea D Moore	n.a.
06050	ICP/MS SW-846 Water	SW-846 3010A Mod.	1	05/05/2005 15:54	Megersa Deyessa	1
07786	EDB Extraction	SW-846 8011	1	05/05/2005 10:00	Joseph S Feister	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Lancaster Laboratories Sample No. WW 4516621

S27-050205 Grab Water Sample
SUN: Philadelphia Refinery AOI-4

Collected:05/02/2005 14:10 by MBS

Account Number: 10132

Submitted: 05/03/2005 16:35
Reported: 05/10/2005 at 15:14
Discard: 06/10/2005

Langan
500 Hyde Park
Doylestown PA 18901

S-027

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation*	As Received Method Detection Limit	Units	Dilution Factor
06035	Lead	7439-92-1	< 0.0010	0.0010	0.00021	mg/l	1
07879	EDB in Wastewater						
01087	Ethylene dibromide	106-93-4	< 0.029	0.029	0.0095	ug/l	1
07805	PAHs in Water by GC/MS						
03947	Naphthalene	91-20-3	14.	10.	1.	ug/l	1
03956	Fluorene	86-73-7	< 10.	10.	1.	ug/l	1
03963	Phenanthrene	85-01-8	< 10.	10.	1.	ug/l	1
03967	Pyrene	129-00-0	< 10.	10.	1.	ug/l	1
03971	Chrysene	218-01-9	< 10.	10.	1.	ug/l	1
02302	UST-Waters by 8260B						
02010	Methyl Tertiary Butyl Ether	1634-04-4	< 5.	5.	0.5	ug/l	1
05401	Benzene	71-43-2	< 5.	5.	0.5	ug/l	1
05402	1,2-Dichloroethane	107-06-2	< 5.	5.	1.	ug/l	1
05407	Toluene	108-88-3	< 5.	5.	0.7	ug/l	1
05415	Ethylbenzene	100-41-4	< 5.	5.	0.8	ug/l	1
05420	Isopropylbenzene	98-82-8	5.	5.	1.	ug/l	1
06310	Xylene (Total)	1330-20-7	26.	5.	0.8	ug/l	1

Commonwealth of Pennsylvania Lab Certification No. 36-037
This sample was filtered in the lab for dissolved metals.
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	05/06/2005 23:06	David K Beck	1
07879	EDB in Wastewater	SW-846 8011	1	05/06/2005 02:28	James H Place	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	05/06/2005 20:08	Jolene M Graham	1
02302	UST-Waters by 8260B	SW-846 8260B	1	05/06/2005 03:56	Andrea D Moore	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	05/06/2005 03:56	Andrea D Moore	n.a.
06050	ICP/MS SW-846 Water	SW-846 3010A Mod.	1	05/05/2005 15:54	Megersa Deyessa	1
07786	EDB Extraction	SW-846 8011	1	05/05/2005 10:00	Joseph S Feister	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4516621

S27-050205 Grab Water Sample
SUN: Philadelphia Refinery AOI-4

Collected:05/02/2005 14:10 by MBS

Account Number: 10132

Submitted: 05/03/2005 16:35
Reported: 05/10/2005 at 15:14
Discard: 06/10/2005

Langan
500 Hyde Park
Doylestown PA 18901

S-027

07807	BNA Water Extraction	SW-846 3510C	1	05/04/2005 17:00	Olivia I Santiago	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Lancaster Laboratories Sample No. WW 4516622

S26-050205 Grab Water Sample
SUN: Philadelphia Refinery AOI-4

Collected:05/02/2005 15:00 by MBS

Account Number: 10132

Submitted: 05/03/2005 16:35
Reported: 05/10/2005 at 15:15
Discard: 06/10/2005

Langan
500 Hyde Park
Doylestown PA 18901

S-026

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation*	As Received Method Detection Limit	Units	Dilution Factor
06035	Lead	7439-92-1	< 0.0010	0.0010	0.00021	mg/l	1
07879	EDB in Wastewater						
01087	Ethylene dibromide	106-93-4	< 0.029	0.029	0.0097	ug/l	1
07805	PAHs in Water by GC/MS						
03947	Naphthalene	91-20-3	< 10.	10.	1.	ug/l	1
03956	Fluorene	86-73-7	< 10.	10.	1.	ug/l	1
03963	Phenanthrene	85-01-8	< 10.	10.	1.	ug/l	1
03967	Pyrene	129-00-0	< 10.	10.	1.	ug/l	1
03971	Chrysene	218-01-9	< 10.	10.	1.	ug/l	1
02302	UST-Waters by 8260B						
02010	Methyl Tertiary Butyl Ether	1634-04-4	32.	5.	0.5	ug/l	1
05401	Benzene	71-43-2	< 5.	5.	0.5	ug/l	1
05402	1,2-Dichloroethane	107-06-2	< 5.	5.	1.	ug/l	1
05407	Toluene	108-88-3	< 5.	5.	0.7	ug/l	1
05415	Ethylbenzene	100-41-4	< 5.	5.	0.8	ug/l	1
05420	Isopropylbenzene	98-82-8	< 5.	5.	1.	ug/l	1
06310	Xylene (Total)	1330-20-7	< 5.	5.	0.8	ug/l	1

Commonwealth of Pennsylvania Lab Certification No. 36-037
This sample was filtered in the lab for dissolved metals.
Trip blank vials were not received by the laboratory for this sample group.

Laboratory Chronicle

CAT No.	Analysis Name	Method	Trial#	Analysis Date and Time	Analyst	Dilution Factor
06035	Lead	SW-846 6020	1	05/06/2005 23:09	David K Beck	1
07879	EDB in Wastewater	SW-846 8011	1	05/06/2005 03:28	James H Place	1
07805	PAHs in Water by GC/MS	SW-846 8270C	1	05/06/2005 21:07	Jolene M Graham	1
02302	UST-Waters by 8260B	SW-846 8260B	1	05/06/2005 04:21	Andrea D Moore	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	05/06/2005 04:21	Andrea D Moore	n.a.
06050	ICP/MS SW-846 Water	SW-846 3010A Mod.	1	05/05/2005 15:54	Megersa Deyessa	1
07786	EDB Extraction	SW-846 8011	1	05/05/2005 10:00	Joseph S Feister	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories Sample No. WW 4516622

S26-050205 Grab Water Sample
SUN: Philadelphia Refinery AOI-4

Collected:05/02/2005 15:00 by MBS

Account Number: 10132

Submitted: 05/03/2005 16:35
Reported: 05/10/2005 at 15:15
Discard: 06/10/2005

Langan
500 Hyde Park
Doylestown PA 18901

S-026

07807	BNA Water Extraction	SW-846 3510C	1	05/04/2005 17:00	Olivia I Santiago	1

*=This limit was used in the evaluation of the final result

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: Langan Group Number: 941914
Reported: 05/10/05 at 03:15 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ**	Blank MDL	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 051240024A	Sample number(s): 4516620-4516622								
Ethylene dibromide	< 0.030	0.030	0.010	ug/l	100	100	60-140	0	20
Batch number: 05124WAC026	Sample number(s): 4516621-4516622								
Naphthalene	< 10.	10.	1.	ug/l	88	87	58-108	1	30
Fluorene	< 10.	10.	1.	ug/l	100	95	61-116	4	30
Phenanthrene	< 10.	10.	1.	ug/l	97	99	68-111	2	30
Pyrene	< 10.	10.	1.	ug/l	88	90	68-114	2	30
Chrysene	< 10.	10.	1.	ug/l	91	94	70-111	3	30
Batch number: 051256050001A	Sample number(s): 4516620-4516622								
Lead	< 0.0010	0.0010	0.00021	mg/l	100		80-120		
Batch number: T051252AA	Sample number(s): 4516620-4516622								
Methyl Tertiary Butyl Ether	< 5.	5.	0.5	ug/l	99		77-127		
Benzene	< 5.	5.	0.5	ug/l	109		85-117		
1,2-Dichloroethane	< 5.	5.	1.	ug/l	117		77-132		
Toluene	< 5.	5.	0.7	ug/l	104		85-115		
Ethylbenzene	< 5.	5.	0.8	ug/l	97		82-119		
Isopropylbenzene	< 5.	5.	1.	ug/l	97		80-120		
Xylene (Total)	< 5.	5.	0.8	ug/l	98		83-113		

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: 051240024A	Sample number(s): 4516620-4516622								
Ethylene dibromide	84		65-135			< 0.028	< 0.029	0 (1)	30
Batch number: 051256050001A	Sample number(s): 4516620-4516622								
Lead	100	101	75-125	1	20	< 0.0010	< 0.0010	25* (1)	20
Batch number: T051252AA	Sample number(s): 4516620-4516622								
Methyl Tertiary Butyl Ether	104	107	69-134	4	30				
Benzene	115	115	83-128	0	30				
1,2-Dichloroethane	123	124	73-136	1	30				
Toluene	108	110	83-127	2	30				
Ethylbenzene	100	102	82-129	2	30				
Isopropylbenzene	98	102	81-130	5	30				
Xylene (Total)	100	100	82-130	0	30				

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Lancaster Laboratories

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Analysis Report

Quality Control Summary

Client Name: Langan Group Number: 941914
Reported: 05/10/05 at 03:15 PM

Sample Matrix Quality Control

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max

Surrogate Quality Control

Analysis Name: EDB in Wastewater
Batch number: 051240024A

	1,1,2,2-Tetrachloroethane
4516620	82
4516621	106
4516622	117
Blank	102
DUP	75
LCS	104
LCSD	103
MS	96
Limits:	52-120

Analysis Name: PAHs in Water by GC/MS
Batch number: 05124WAC026

	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
4516621	76	81	92
4516622	69	77	88
Blank	77	86	94
LCS	77	86	98
LCSD	76	86	102
Limits:	51-123	64-112	53-135

Analysis Name: UST-Waters by 8260B
Batch number: T051252AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
4516620	94	90	94	102
4516621	92	87	93	102
4516622	94	88	94	103
Blank	98	88	92	98
LCS	95	86	92	100
MS	96	86	91	99
MSD	97	87	94	100
Limits:	81-120	82-112	85-112	83-113

*- Outside of specification
**-This limit was used in the evaluation of the final result for the blank
(1) The result for one or both determinations was less than five times the LOQ.
(2) The background result was more than four times the spike added.

Analysis Request / Environmental Services Chain of Custody

Lancaster Laboratories
Where quality is a science.

For Lancaster Laboratories use only
Acct. # 10132 Group# 941914 Sample # 451661620-22

COC # 0084325

Please print. Instructions on reverse side correspond with circled numbers. cooler temp 1.1-1.6°C

(1)
Client: Sun- Aquaterra / Langan Acct. #:
Project Name/#: Sun-Philadelphia Refinery ACT-4 PWSID #:
Project Manager: K. Martin / J. Hanna (Langan) P.O.#:
Sampler: M. Brad Spancake Quote #:
Name of state where samples were collected: PA

(2) Sample Identification	Date Collected	Time Collected	(3) Grab	Composite	(4) Matrix: Soil	Water	Other	Total # of Containers	(5) Analyses Requested: 8260 BTEX, MTBE, Cumene, EDC	8011 EDB	6020 Dissolved Pb	8270 Fluorene, Phenanthrene, Pyrene, Chrysene, Naphthalene	
S31-050205	5/2/05	1330	X			X		6			X		
S27-050205	5/2/05	1410	X			X		8	X			X	
S26-050205	5/2/05	1500	X			X							

(5) For Lab Use Only
FSC:
SCR #:

(6) Remarks
Dissolved Pb sample is about 200mL of sample.

Dissolved Pb samples are unfiltered/unpreserved

(7) **Turnaround Time Requested** (TAT) (please circle): (Normal) Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: 5 Day TAT
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
QC Summary, Type I (Tier I), Type II (Tier II), Type III (NJ Red. Del.), Type IV (CLP), Type VI (Raw Data), GLP, Other
SDG Complete? Yes (No)
Site-specific QC required? Yes (No)
(If yes, indicate QC sample and submit triplicate volume.)
Internal Chain of Custody required? Yes (No)

Relinquished by:	Date	Time	Received by:	Date	Time
M. Brad Spancake	5/2/05	1700	Aquaterra Fridge	5/2/05	1700
M Mulvaney	5-3-05	1100	Marvin McFallister	5/3/05	11:00
Marvin McFallister	5/3/05	16:35			
			Jessica	5/3/05	1635

(9)

Lancaster Laboratories, Inc., 2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 (717) 656-2300
Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102 Rev. 10/27/02

Lancaster Laboratories
2425 New Holland Pike • Lancaster, PA 17601

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

N.D.	none detected	**BMQL**	Below Minimum Quantitation Level
TNTC	Too Numerous To Count	**MPN**	Most Probable Number
IU	International Units	**CP Units**	cobalt-chloroplatinate units
umhos/cm	micromhos/cm	**NTU**	nephelometric turbidity units
C	degrees Celsius	**F**	degrees Fahrenheit
meq	milliequivalents	**lb.**	pound(s)
g	gram(s)	**kg**	kilogram(s)
ug	microgram(s)	**mg**	milligram(s)
ml	milliliter(s)	**l**	liter(s)
m3	cubic meter(s)	**ul**	microliter(s)

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

J estimated value – The result is ≥ the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns >25%
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is <CRDL, but ≥IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*****	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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